INTRODUCTION

Optimising outcomes of hospital infections through appropriate empirical antimicrobial therapy

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Despite advances in antimicrobial therapy, better supportive care modalities, and the use of a wide range of preventive measures, hospital-acquired infections continue to be important causes of morbidity and mortality. Advances in the field of hospital infection management were explored at a symposium entitled 'Optimising outcomes of hospital infections through appropriate empiric antimicrobial therapy' at the 17th European Congress of Clinical Microbiology and Infectious Diseases in Munich, Germany, on 1 April 2007. The specific aims of the symposium were to present relevant findings and concepts regarding: (i) the evolving microbiology of resistant bacterial pathogens, including methicillin-resistant *Staphylococcus aureus* (MRSA) and important Gram-negative pathogens; (ii) the clinical and pharmaco-economic impact of inappropriate antimicrobial therapy in an environment of increasing resistance and patient complexities; (iii) current and emerging strategies for managing today's prevalent bacterial infections in hospitalised patients; and (iv) new and emerging therapies for the management of resistant pathogens.

The presentations detailed in this supplement can be summarised as follows. Jean Chastre, of the Groupe Hôpital Pitié-Salpêtrière in Paris, explained that conditions in intensive care units are particularly conducive to the emergence of resistance, and this resistance is not uniform in its geographical distribution. He discussed the clinical implications of the increasing prevalence of MRSA as well as the increasing rates of antimicrobial resistance seen in other Gram-positive and Gram-negative pathogens, and presented recommendations for appropriate antimicrobial stewardship to achieve optimal efficacy in managing today's resistant pathogens. Peter Davey, from the University of Dundee, defined 'inappropriate' antimicrobial therapy as either ineffective against the causative pathogen or effective but delayed by the time that elapsed before effective therapy was started. They showed that inappropriate treatment is common in today's clinical setting and is associated with a greater risk of adverse clinical outcomes, including increased overall treatment costs. Davey described several computerised decision-support systems that are being developed to help clinicians identify the optimal approaches to antimicrobial treatment in their hospitals. Yehuda Carmeli, from the Tel Aviv Sourasky Medical Center, discussed the clinical impact of today's problematic bacterial pathogens, particularly noting the virulence associated with Panton–Valentine leukocidin, which is now found in many MRSA strains. He also suggested treatment strategies that incorporate empirical therapy, noting the risks of delaying appropriate empirical therapy. Finally, Philippe Moreillon, from the University of Lausanne, focused on the mechanisms by which *S. aureus* acquires resistance to the penicillins and how the emerging resistance of *S. aureus* to vancomycin, first seen in the USA and now documented worldwide, underscores the continuing need for antimicrobial agents that counter these new mechanisms. Stressing the ongoing need for new classes of antimicrobial agents, Moreillon further described the target mechanisms and properties of several recently approved agents and others in late

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stages of development for the treatment of MRSA.

These presentations stimulated lively and interesting discussions on the present situation and the future of antimicrobial treatments. The main theme of the presentations was the importance of treating serious bacterial infections quickly with empirical antimicrobial therapy. We look forward to further interesting developments in this field.